

CLAIMS

1. An adjustable bicycle seat post assembly, comprising:
 - an outer seat tube having an open upper end and an opposite lower end insertable into a seat post receptacle of a bicycle frame;
 - an inner seat post having a lower end telescopically received in said open end of said outer seat tube and an opposite upper end adapted to mount a bicycle seat;
 - a spring housed within said outer seat tube and acting with a constant spring force between said outer seat tube and said inner seat post to constantly bias said inner seat tube axially outwardly of said outer seat tube toward a fully extended position;
 - a latch member carried by said outer seat tube and moveable between latched and unlatched positions; said latch member being engagable with said inner seat post when in said latched condition for selectively locking said inner seat post in a selected one of at least two positions of adjustment relative to said outer seat tube; and
 - a magnetic switch operative to move said latch member.
2. The assembly of claim 1 wherein said magnetic switch includes a pair of switch magnets of opposite polarity.
3. The assembly of claim 2 wherein said magnetic switch includes a switch housing supporting said switch magnets for sliding movement relative to said latch member.
4. The assembly of claim 3 wherein said latch member moves under the influence of a changing magnetic field in response to moving said switch magnets.

5. The assembly of claim 4 wherein latch member comprises a locking pin slidable along a pin axis between said latched and unlatch positions, and said switch magnets are moveable along an axis transverse to said pin axis.
6. The assembly of claim 5 wherein said switch magnets are moveable to a first position operative to magnetically repel said locking pin away from said switch magnets urging said locking pin toward said latched position.
7. The assembly of claim 6 wherein said switch magnets are moveable to a second position operative to magnetically attract said locking pin toward said switch magnets urging said locking pin toward said unlatched position.
8. The assembly of claim 7 wherein said locking pin mounts a pin magnet having a fixed polarity which is magnetically attracted to one of said switch magnets and is magnetically repelled by the other of said switch magnets.
9. The assembly of claim 8 wherein said slide shoe is moveable in a plane transverse to said pin axis to position one or the other of the switch magnets along said pin axis to either attract or repel said pin magnet.
10. The assembly of claim 9 including a push-pull cable coupled at one end to said switch housing and said slide shoe and an opposite end to a lever which is operative to move said slide shoe relative to said switch housing.
11. The assembly of claim 10 wherein said push-pull cable extends into said switch housing along an axis transverse to said pin axis.
12. An adjustable bicycle seat assembly comprising;
 - a hollow tube for insertion into a bicycle frame and having a longitudinal axis;
 - a seat post for supporting a seat and slidably disposed in said hollow tube;

a locking mechanism interconnecting said tube and said post for locking said post in various adjustable positions relative to said tube;

said mechanism including a foundation disposed on said tube;

a projection integral with said foundation and extending radially from said axis to a distal end;

said mechanism including a plunger for engaging said post;

said projection including a counterbore perpendicular to said longitudinal axis for slidably supporting said plunger;

an endcap attached to said distal end of said projection.

13. An adjustable bicycle seat assembly as set forth in claim 12 wherein

said hollow tube presents an outer circumference;

said foundation including a bottom surface disposed on said hollow tube.

14. An adjustable bicycle seat assembly as set forth in claim 13 wherein said foundation and said bottom surface thereof extends less than 180 degrees about said circumference of said hollow tube.

15. An adjustable bicycle seat assembly as set forth in claim 14 wherein said circumference and said bottom surface are circular.

16. An adjustable bicycle seat assembly as set forth in claim 14 wherein said foundation is adhesively secured to said hollow tube.

17. An adjustable bicycle seat assembly as set forth in claim 14 wherein said projection includes a height along said longitudinal axis and a width perpendicular to said height and said height being greater than said width.

18. An adjustable bicycle seat assembly as set forth in claim 16 wherein said projection includes a wall thickness surrounding said counterbore with said wall

thickness being greater in the direction of said height than in the direction of said width.

19. An adjustable bicycle seat assembly as set forth in claim 14 wherein said counterbore includes a force-bearing length for supporting the shearing force of said plunger when said plunger engages said post and a disk.

20. An adjustable bicycle seat assembly as set forth in claim 8 wherein said post includes a plurality of holes each having a force-bearing diameter for receiving said plunger.

21. An adjustable bicycle seat assembly as set forth in claim 19 wherein
said plunger includes a force-bearing section slideably supported by said force-bearing length of said counterbore;

said force-bearing section of said plunger being greater in length than said force-bearing length of said counterbore;

a disk extending radially from said plunger for movement along said disk of said counterbore.

22. An adjustable bicycle seat assembly as set forth in claim 21 wherein
said distal end of said projection includes a housing integrally connected to said projection;

a slider bar slidably disposed in said housing below said endcap and above said plunger for movement along a slider axis between a first position and a second position;

said disk includes a plunger magnet having a plunger magnetic polarity;

said slider bar includes an attracting magnet having an attracting magnetic polarity opposite to said plunger magnetic polarity;

said attracting magnet is centered over said plunger magnet when said slider bar rests in said first position;

said slider bar includes a repelling magnet having a repelling magnetic polarity matching said plunger magnetic polarity;

said repelling magnet is centered over said plunger magnet when said slider bar rests in said second position.

23. An adjustable bicycle seat assembly as set forth in claim 22 wherein a remote control assembly is attached to said slider bar for manipulating said plunger.

24. An adjustable bicycle seat assembly as set forth in claim 23 wherein said housing includes at least one threaded screw hole in the direction of said slider axis;

at least one tension set screw is threaded into said screw hole;

at least one tension spring reacts between said tension set screw and said slider bar;

said slider bar defines at least one spring hole for receiving said tension spring;

said remote control assembly includes a push-pull cable having an outer sheath and an inner control cable;

said outer sheath moveably supports said inner control cable;

said remote control assembly includes a remote thumbswitch connected to said push-pull cable;

said housing includes a cable mount disposed along said slider axis;

said outer sheath is attached to said cable mount;

said outer sheath is disposed in a substantially parallel relationship to said longitudinal axis at said cable mount;

said housing includes a cable hole inside said cable mount;

said inner control cable extends through said cable hole;

said inner control cable is connected to said slider bar for manipulating said slider bar using said thumbswitch;

said housing and said slider bar have a rounded shape at an end of said slider axis opposite to said cable mount.

25. An adjustable bicycle seat assembly as set forth in claim 21 wherein

said plunger end includes a knob supporting section having a diameter less than said disk diameter;

said disk is located between said force-bearing section and said knob supporting section;

a spring is disposed about said plunger and reacts between said disk and said endcap;

a knob is attached to said knob supporting section.

26. An adjustable bicycle seat assembly as set forth in claim 24 wherein

an outer surface on said foundation presents a flat outer surface opposite to said bottom surface;

said projection extending laterally from said flat outer surface.

27. An adjustable bicycle seat assembly as set forth in claim 26 wherein said bottom surface of said foundation is circular and said flat outer surface extends tangentially to said bottom surface.

28. An adjustable bicycle seat assembly as set forth in claim 27 wherein said projection extends perpendicularly to said flat outer surface.

29. An adjustable bicycle seat assembly as set forth in claim 28 wherein said foundation includes polygonal flat surfaces disposed alongside said flat outer surface.

30. An adjustable bicycle seat assembly as set forth in claim 29 wherein a cross section of said foundation defines one half of an octagon.

31. An adjustable bicycle seat assembly as set forth in claim 14 wherein
said hollow tube defines a plurality of longitudinal grooves disposed along said longitudinal axis inside said tube;
said post includes a plurality of notches;
a plurality of friction bearing shims are removably inserted into said notches for sliding in said longitudinal grooves.

32. An adjustable bicycle seat assembly as set forth in claim 31 wherein
said assembly includes a top orientation along said longitudinal axis;
said hollow tube is composed of metal;
said post is composed of metal;
said post is hollow;
said post includes a seat clamp mount on top of said post;
a seat clamp assembly is removably connected to said seat clamp mount;
said tube includes top cap threads at the top of said tube;
a top cap is threaded onto said top cap threads;
said top cap is composed of polymeric material;
said top cap includes a central hole;
said post extends through said central hole;

said seat clamp collar has a seat clamp collar diameter defined larger than said central hole;

a sleeve is slidably disposed about said post and located below said top cap and above said shims;

said sleeve is composed of polymeric material;

said sleeve includes a top flange integrally connected with said sleeve;

said top flange has a diameter matching to said tube;

a seal is slidably disposed about said post and located between said top flange and said top cap;

said seal is composed of polymeric material;

a bottom cap is attached to said bottom of said post;

said bottom cap is composed of polymeric material;

said bottom of said hollow tube includes threads located inside said hollow tube;

a bottom cap nut is threaded onto said threads inside said hollow tube;

said bottom cap nut is composed of metal;

a main spring reacts between said post and said bottom cap nut;

a hex shaped hole centered on said bottom cap;

said projection includes at least one cap screw hole located below said endcap;

said endcap includes at least one endcap hole centered over said cap screw hole;

at least one cap screw extends through said endcap hole;

at least one cap screw is threaded into said cap screw hole for attaching said endcap to said projection.